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HORIZONS IN CHILD HEALTH SUPERVISION

Jean F. Webb

STAPHYLOCOCCI IN CHEESE: SOME PUBLIC HEALTH ASPECTS

F. S. Thatcher, R. D. Comtois, Doreen Ross, I. E. Erdman

THE ROLE OF THE UNIVERSITY IN THE EDUCATION OF PUBLIC HEALTH WORKERS

James M. Mather

THE DEVELOPMENT OF SHELLFISH SANITATION PROGRAMS IN THE UNITED STATES AND CANADA

J. R. Menzies

Index to Volume 50, 1959

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VOLUME 50

DECEMBER 1959

NUMBER 12

CONTENTS

ARTICLES:

- Horizons in Child Health Supervision..... 491
Jean F. Webb, M.D., D.P.H.
- Staphylococci in Cheese: Some Public Health Aspects..... 497
F. S. Thatcher, R. D. Comtois, Doreen Ross, I. E. Erdman
- The Role of the University in the Education of Public Health Workers..... 504
James M. Mather, M.D., D.P.H.
- The Development of Shellfish Sanitation Programs in the United States and Canada..... 510
J. R. Menzies, B.A.Sc., O.L.S., C.E.

EDITORIAL SECTION:

- Public Health is One World..... 516
- The Organizing Committee of the Canadian Public Health Association..... 517

VITAL STATISTICS:

- Trends in Mortality from Leukaemia in Ontario..... 518
Joan G. Sloman, B.A. and A. H. Sellers, M.D., D.P.H.

DEPARTMENTS:

- Association News..... 519
- News Notes..... 519
- Books and Reports..... 522

- INDEX to Volume 50, 1959..... i

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Canadian Journal of **PUBLIC HEALTH**

VOLUME 50

DECEMBER 1959

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Horizons in Child Health Supervision¹

JEAN F. WEBB,² M.D., D.P.H.

WE have come a long way since Dr. J. Bunnell Davis published in London, in 1817, his "Cursory Inquiry into the Principal Cause of Mortality in Children". In 1816 he had founded a dispensary for sick and indigent children and in connection with this institution had inaugurated a system of health visiting by benevolent ladies among the children of the poor. Appraisal of growth and development is also not new. In 1831, a Belgian astronomer and statistician published anthropometric research on the growth of newborns and preschool children and noted the variation in the relative weight and the height of the sexes at puberty. Lastly, it was Dr. Pierre Budin, a professor of obstetrics in Paris, who in 1892, set up one of the first consultation services for nurseries in connection with his obstetric service. Here mothers could have their infants supervised, weighed and examined, and themselves receive instruction in feeding and hygiene.

Out of such child welfare services, first provided by private individuals and institutions for infants of the poor and socially deprived, has evolved over the years a concept of continuing health supervision of children regardless of economic or social status. This major activity of health departments involves comprehensive programs reaching out now to children of all ages and their families. While retaining a basic interest in nutrition, communicable disease control, and recognition of specific health problems, more and more time is being spent on interpreting to parents what children in general are like, how they grow and develop, what stage their own child has reached and what to expect of him in the future. The objectives are to promote healthy growth and development; to recognize early deviations from the normal, and to develop understanding, capable and self-confident parents and children who have a concept of health as a basic requirement for effective living.

Dr. H. C. Stuart of the Harvard School of Public Health, an authority on child development, states, "Growth denotes natural increase in size. The term

¹Opening address at the Second Annual Refresher Course in Public Health and Preventive Medicine, School of Hygiene, University of Toronto. Feb. 9, 1959.

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development indicates an increasing maturation or differentiation in structure or function. Growth is more readily evaluated than development because physical measurements are easier to apply and interpret. Both progress together but not necessarily at the same rate." It is well known that periods of acceleration in growth or development may or may not coincide. To serve children most effectively we must be aware of these periods of growth and developmental stress and gear health supervision services to meet children's changing needs. I am not sure that our present pattern of child health services takes this developmental pattern fully into consideration.

Admittedly, physical growth is a continuous process but it has a recognized pattern with two peaks of rapid growth, one during the first year, and the second during the pre-adolescent period. There is no doubt that much attention has been and continues to be focused on the growth needs of the first year in the emphasis on infant feeding. This emphasis has been appropriate and productive. If analysis of specific factors was possible I suspect that as much credit for mortality reduction in communicable disease would be given to improved nutrition as to specific preventive and curative techniques. Tangible results of infant care programs are familiar to all in present infant mortality rates. It might be argued that we have "oversold" infant nutrition and given weight gain and infant feeding too much importance in parents' minds. Whether rapid gain and infant obesity will have long term ill effects in terms of longevity remains to be seen. Forced feeding has been shown to have adverse effects in experimental animals. There is no doubt in my mind, however, that overzealous feeding of toddlers without regard for their slower growth rate and their consequent reduced caloric need is the basis for many feeding problems in preschool children.

Preschool Health

The peak of parental interest in health supervision seems to be in the infancy period. Attendance at child health conferences or well baby clinics falls off progressively into the preschool period. There are, no doubt, a number of reasons for this. Perhaps parents do not have the same concern about problems of this period and feel more competent to handle them. Perhaps health workers feel less competent, less able to give parents the support and advice they need to help the toddler to adapt to both his physical and social environment.

Dr. Alfred Washburn of the University of Colorado, another lifetime student of child development, states, "The most absorbing and the most meaningful developments of the preschool years are in the realm of personality development. Closely related are such problems as: food intake and eating habits; bowel and bladder elimination; reaction to pain inflicted by others; and reactions to the arrival in the family of a new baby. Meanwhile, with constantly broadening horizons they are exposed to more infections to which they must adapt . . . representing for the child a series of physiologic and psychologic adjustments . . . This is perhaps the period of most difficult and far reaching adaptations during development."

If we agree that this is a crucial period in a child's life perhaps parental interest can be stimulated by giving health services to preschool children a

more specific focus. For example, there are a number of areas of the country where preschool dental supervision has been introduced and accepted. The whole field of accident prevention in the home lies open for development. I can think of no more suitable channel for home safety education than public health nursing services which reach into the home. Preschool hazards are so much related to the child's developing muscle skills, imagination and curiosity. Vision and hearing are of prime importance before as well as during the school years. Any such program may act as the thin edge of the wedge to open the door through which children are brought into a comprehensive program.

School Health

The elementary school years have been described as a relatively latent period in both growth and development, during which children remain on a sort of developmental plateau. Yet in the history of school health services a great deal of emphasis has been placed on this age group although the principal focus has gradually shifted from the control of communicable disease to the detection of physical defects and most recently to the consideration of the total performance of the child in the school. From being an inspection system it has become a consultant health service not only for pupils and parents but for teachers and school administrators as well. I suspect that some of the difficulties and uncertainties about present school health programs stem from the fact that we are still to some extent in transition, not quite willing to relinquish all the procedures of the physical inspection period, nor altogether prepared to function as advisers, not only on physical health and communicable disease, but on emotional and social development as well.

The basic components of health supervision of school children do not differ essentially from those of younger children, namely, health promotion, continuing health appraisal, and counsel regarding specific health problems. At this point, however, a new factor is added, the understanding and motivation of the child. From here on he is learning about health and it is imperative that his experience with health workers and teachers be such as to have meaning for him in terms of his daily living. Health services should demonstrate to the child the health principles which the school is attempting to teach.

This need to make the health services to the child educational experiences is quite in harmony with present practice which puts much less emphasis on assembly line medical or nursing appraisal and much more emphasis on the study of the individual child who is considered by the teacher and health worker to have a health problem. This system of teacher-nurse consultation and referral not only provides better service to children but makes the program more purposeful for teachers and more interesting for the health workers.

This shared responsibility between teacher and public health nurse for the recognition of health problems is a concept which has not been accepted unreservedly by all teachers, or indeed by all public health workers. At the very least, a great deal of interpretation needs to be done regarding the changing emphasis of the school health program. At most, it may require basic changes not only in teacher training but in medical and nursing preparation as well. Medical officers and public health nurses have a major and continuing role to

play in the orientation of teachers in the field of child health and health education. This aspect of school health programs may need more attention than it now is getting.

Adolescence is the one period when rapid physical growth, rapid development of primary and secondary sex characteristics and pronounced changes in personality development coincide. The adolescent is faced with many emotional adjustments relating to his family, to the opposite sex, to those in authority, indeed to himself. This dynamic period of child development appears worthy of fuller exploitation by health workers. If the adolescent is not fully considered in the school health program a priceless opportunity will be lost to help assure the good health of children yet to be born. To use nutrition as an example, Genevieve Stearns of Iowa State University states that in all strata of American society the adolescent girl has the poorest diet of any member of the family. The urge for slenderness and the compulsion to do as the group does results in the girl's refusal to eat nutritious food at home, yet she snacks frequently at the gathering places for her group. The result is that her plane of nutrition is low. The adolescent boy asks only for quantity. In the health field, as in every other area of living, the adolescent needs supervision appropriate to his interests. The status which health enjoys in the minds of adolescents and the responsibility they accept for their personal health will be key factors in their success as parents a few years hence.

The Handicapped

Another segment of the community which includes children of all ages is the handicapped. We are all aware of recent developments in services for the handicapped, particularly in areas such as cerebral palsy and mental retardation, previously ignored. Such children have the same needs for health supervision as normal children, as well as the need for special diagnostic and treatment services. Also, in many instances, their families need help in accepting the inevitability of continuing disability and assistance in planning care for the handicapped child in terms of the best interests of the whole family.

Public Health and Private Practice

So far, no mention has been made of the private physician in this program. I think we can expect that more preventive health service, more health supervision of children will be done by private physicians. There are probably several reasons for this—reduction in serious childhood illnesses releasing medical time and, too, greater interest in health supervision especially on the part of younger physicians who are better trained in growth and development and in the preventive aspects of child care. This trend is all to the good. There is no evidence to suggest that we have reached a saturation point in health supervision where all children are receiving its benefits to the point where duplication of service occurs. There will always be a place for public health participation in health supervision to complement private physicians' services and to demonstrate to each succeeding generation of parents what child health supervision is and how it can help them.

In the field of therapeutic medicine, particularly in the management of complex long-term health problems, there is a growing recognition that good

management requires a number of disciplines, not only for the definitive diagnosis of the disability but also for treatment and eventual rehabilitation into the community. Comprehensive health supervision, too, requires a variety of professional skills, perhaps the most important one being the skill of the public health nurse. With the addition of more refined screening procedures and increasing emphasis on the mental health needs of children, psychologists, audiologists, nutritionists, dental hygienists and other professional workers all make important contributions.

The need for communication among all health workers is well illustrated in school health services. Any system whereby individual teachers communicate with individual physicians regarding the health problems of individual pupils would be chaotic. The existence of the school health service provides the channel for communication and interpretation among educators, parents, private physicians and community resources. Knowledge of the child from all sources is necessary to assess his health status and health needs. If the private physician and his services are not included there will be serious gaps in knowledge of the child's response to illness. If the sole responsibility for supervision is left to the private physician, the observations of teachers and public health nurses and certain screening tests may not be available to him. The child will therefore be less well served.

The conflict, where it exists, will not be resolved by public health agencies relinquishing the field of health supervision to the private physician merely because he feels the total care of the child is his prerogative. Public health workers must continue to take the initiative in interpreting the goals of public health practice to practising physicians in terms of services to individuals. This is our product. If we believe that personal health services are valuable we must sell them. With better mutual understanding the complementary roles of private physicians and public health workers can, I am sure, be worked out in a satisfactory way. For example, the physician must learn to appreciate that health education and services of public health nurses may be helpful to any family regardless of financial status. Alternatively, the public health agency must acknowledge that the private physician is the co-ordinator of health services provided to the family in the same way in which the medical officer of health is the co-ordinator of health services within his community. The basic question is not whether the physician or the health agency provides a particular service but how all services can be better integrated to serve all children.

SUMMARY

Continuing health supervision of children regardless of economic or social status is a major activity of health departments involving comprehensive programs reaching out to children of all ages and their families.

Our concentrated efforts to protect the health of infants by improving nutrition and reducing communicable disease, which have brought rich and tangible rewards in reduced infant mortality, should be continued. Program modification may be possible to achieve the same result using less professional time.

Further effort should be made to bring the preschool child and his parents within the scope of health supervision, so that parents will have help available

not only in protecting his physical health but, equally important, in promoting his mental health, guiding his personality development.

School health services should continue to integrate health services and health teaching in a way that is meaningful to both the child and the teacher. Further emphasis on health supervision and health teaching of adolescents in terms of their present interests and future responsibilities will bring rewards in better health of the generation soon to be born.

Families of handicapped children have more than usual needs for health services to help them accept the disability and plan for management in terms of the best interests of the whole family.

Private physicians and public health workers are not competitors but collaborators in a comprehensive program to bring the benefits of health promotion, health protection and health education to all children.

SOMMAIRE

Une surveillance continue de la santé des enfants, sans tenir compte des conditions économiques ou sociales, constitue une des principales activités de tout service de Santé; aussi leurs programmes doivent-ils tendre à atteindre les enfants de tout âge et leurs parents.

Nous devons continuer les efforts concertés que nous avons faits jusqu'ici pour protéger la santé des nourrissons, en améliorant leur alimentation et en réduisant les maladies infectieuses, deux mesures préventives qui ont sensiblement réduit le taux de mortalité infantile. Toutefois, certaines modifications des programmes pourraient peut-être donner les mêmes résultats tout en allégeant la tâche du personnel spécialisé.

Les services de santé devraient s'efforcer d'inclure dans leur champ d'action, les enfants d'âge pré-scolaire et leur famille. Les parents devraient pouvoir compter sur l'aide de ces services, non seulement pour protéger la santé physique de leurs enfants, mais aussi pour promouvoir leur santé mentale et guider le développement de leur personnalité, deux fins aussi importantes que la première.

Les services d'hygiène scolaire devraient continuer de coordonner la surveillance de la santé et l'enseignement de l'hygiène dans les écoles, afin que les enfants aussi bien que les professeurs aient l'opportunité de saisir le vrai sens pratique de l'hygiène. Ces mêmes activités auprès des adolescents devraient être adaptées à leurs intérêts actuels et en raison de leurs responsabilités futures; une adhésion franche de leur part à ces principes aurait pour résultat une prochaine génération plus robuste.

Les familles comptant des enfants handicapés ont besoin d'attentions bien particulières de la part des services de santé pour leur aider à s'adapter aux circonstances et à s'organiser en conséquence pour le plus grand bien de la famille entière.

Les médecins praticiens et les hygiénistes ne doivent pas se considérer comme des compétiteurs, mais bien plutôt comme des collaborateurs dans la réalisation d'un programme compréhensif qui assure l'amélioration et la protection de la santé, ainsi que l'enseignement de l'hygiène pour tous les enfants.

Staphylococci in Cheese: Some Public Health Aspects

F. S. THATCHER,¹ R. D. COMTOIS,² DOREEN ROSS,¹ I. E. ERDMAN¹

EARLIER studies from this laboratory (1) have shown a common occurrence of toxigenic staphylococci in cheese. In the meantime, staphylococcal infections in man and in dairy herds have become of increasing significance, and reports of food-poisoning from cheese have come to our attention.

Accordingly, a survey was made during 1957 of the distribution of staphylococci in marketed Canadian cheese made from unpasteurized milk and in cheese imported from several countries, most of which is made from pasteurized milk or subsequently has received bacteriologically equivalent heat-processing.

In addition, from a particular factory (Factory A) some of whose product had been shown to contain an outstandingly large number of staphylococci, a specimen of milk from each contributing herd was examined for the presence of these organisms, and specimens from 166 different vats of cheese from the same factory were tested for enterotoxin.

METHODS

Cheese identifiable as to factory of origin and date of manufacture was purchased retail or from packaging establishments with a view to obtaining a representative selection from the main production areas of Canada. Three specimens providing as wide a range as possible in date of manufacture were bought from each factory source. For the more intensive examination of cheese from factory A, specimens were obtained to the extent available from each vat of cheese made over a six-months' period. In addition, a 100-ml. specimen of milk was obtained from a single shipping container from each of the 53 "patrons" of the factory. The specimens were taken with the use of sterile pipettes and were immediately transported in pre-cooled containers packed in ice until testing some 3-4 hours later. Packages of imported cheeses of as many types as available were purchased retail by random selection in five different marketing areas.

From each cheese specimen, 20 gm. samples were comminuted for 3 min. in 180 ml. sterile water with the aid of a Waring blender. Using "Difco" Mannitol-salt agar as plating medium, a plate count of mannitol-positive micrococci was obtained from all such cheese preparations and from milk by standard dilution methods. The inoculated medium was incubated at 35°C. for 48 hr. From the plated specimen of highest dilution to develop mannitol-positive micrococci,

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²Laboratory of Hygiene, Department of National Health and Welfare, Ottawa.

*Baltimore Biological Laboratories.

six colonies were tested for the production of coagulase for which a positive result was recorded if addition of a loopful of the growth from a 24-hr. agar culture caused development of a firm gel in 0.5 ml. of "Difco" rabbit plasma after incubation at 37°C. for 3 hours. The number of coagulase-positive organisms was expressed as the number of "mannitol-positives" per gram multiplied by the proportion of the six tested colonies that produced coagulase. All further mention of staphylococci refers to coagulase-positive strains.

One culture from each specimen of both cheese and milk was purified prior to determination of its specific phage sensitivities which was carried out by standard procedures at the National Staphylococcus Phage Typing Centre.

Four coagulase-positive cultures from each sample were tested for their resistance to penicillin, chlortetracycline, dihydrostreptomycin and erythromycin, using B.B.L.* "antibiotic sensitivity discs" from production lots whose actual and labelled potency had been shown to be closely coincident.

From all milk specimens, the bacterial "clump count" and the numbers per ml. of polymorphonuclear leucocytes and of erythrocytes were also determined.

The presence of enterotoxin in the cheese obtained from factory A was determined by the occurrence of emesis in young adult cats as a response to intraperitoneal injection of a filtrate from a 30% suspension of cheese comminuted in water. The filtrate was held in a boiling water-bath for 30 min. and cooled before injection at the rate of 5 ml. per cat. Control injections were made using cheese of the same type shown to be free from staphylococci. For about half the specimens, 3 cats were used at each test, but because of the large number of specimens to be tested and the need to minimize the risk of developing resistance to enterotoxin among the colony of 50 cats, later tests were each based on the use of 1 cat only. The consequent limitation of accuracy is recognized.

RESULTS

Staphylococci in Canadian Cheese

The numerical distribution of staphylococci among the 224 "survey" specimens of Canadian cheese is tabulated in relation to age of the cheese in Table 1.

TABLE 1—THE DISTRIBUTION OF STAPHYLOCOCCI IN CHEESE IN RELATION TO THE AGE OF CHEESE
(Trans-Canada survey, 224 specimens, 80 factories)

Age of cheese (days)	No. of specimens with specific staph. content (No. per gm.)						Total No. Specimens
	0-10 ²	10 ² -10 ³	10 ³ -10 ⁴	10 ⁴ -10 ⁵	10 ⁵ -10 ⁶	10 ⁶	
1-60	4	3	6	14	8	5	40
61-120	24	8	11	20	9	0	72
121-180	21	10	4	4	2	2	43
181-240	11	3	3	0	0	0	17
241-360	20	0	0	0	0	0	20
>360	26	1	1	1	0	0	29
age unknown	0	1	0	2	0	0	3
Total per category	106	26	25	41	19	7	224

TABLE 2—THE NUMERICAL DISTRIBUTION OF STAPHYLOCOCCI IN CHEESE AND THE QUALITY OF MILK FROM A SPECIFIC FACTORY (FACTORY A)

Categories No./gm. or ml.	No. of specimens with contents within specified categories			
	Cheese (vat specimens)	Milk (herd specimens)		
	Staph.	Staph.	Leucocytes	Bacterial clumps
0-10 ²	36	10	0	0
10 ² -10 ³	8	0	0	0
10 ³ -10 ⁴	31	7	0	0
10 ⁴ -10 ⁵	50	16	5	0
10 ⁵ -5×10 ⁵	31	18	39	0
5×10 ⁵ -10 ⁶			8	1
10 ⁶ -5×10 ⁶	10	1	1	14
5×10 ⁶			0	38
Total no. specimens	166 vats	53 herds	53	53

Staphylococci were absent (less than 100/gm.) in 106 specimens (47%) but exceeded 10,000 per gm. in 67 specimens (30%). Of these, seven (3%) contained more than 1,000,000 per gm. With the exception of one specimen, which was more than 1 year old, staphylococci were not found in numbers greater than 10,000 per gm. in cheese older than 6 months. Up to that age the distribution of staphylococci followed a normal pattern. The incidence of staphylococci showed no determinable difference in relation to province of origin of the cheese.

The data in Table 2 refer to factory A, and show the distribution of staphylococci in cheese and milk and also of leucocytes and the "bacterial clumps" in the milk. Cheese from factory A contained staphylococci in numbers greater than 10,000 per gm. in 91 specimens (54%); 10 (6%) exceeded 1,000,000 per gm. Staphylococci were absent in 36 (21%). Staphylococci were present in numbers greater than 10,000 per ml. in 36 of the 53 herd specimens of milk. The staphylococcus count in milk from one herd exceeded 5,000,000 per ml. The leucocyte content of the milk from nine herds exceeded 500,000 per ml., a figure frequently referred to as suggestive of mammary inflammation when "polymorphs" are present in such numbers in milk from a specific udder-quarter. The erythrocyte count in these same "bulked" specimens ranged up to 175,000 per ml.

Phage patterns of staphylococci in cheese

The phage patterns identified among the staphylococci isolated from survey specimens of cheese and from the cheese and milk of factory A are listed in Table 3. The various patterns are listed according to their phage group classification recommended by the International Subcommittee on Bacteriophage typing of staphylococci. Fifteen of 151 typable cultures from the cheese survey specimens were phage-type 42D, considered to be a bovine type, and 89 were

lysed by phage 42D in association with other phages, while 47 others were of types which have been known to occur in human infections. These latter types were distributed among phage groups I, II, III, and mixtures of these. The phage-typing and classification of the cultures into the phage groups was performed by one of us (R.D.C.), due consideration being given to accepted variation of phage susceptibility within cultures considered to be of the same epidemiological type. The phage patterns of 17 of 49 cultures of staphylococci

TABLE 3—PHAGE TYPES OF STAPHYLOCOCCI ISOLATED FROM CHEESE AND FROM MILK IN 1957

Phage Group	Phage Pattern	Cheese Survey 1957	Cheese Factory A	Milk* Factory A
A. <i>Bovine Type</i>				
IV	42D (+)	15	8	2
Total		15	8	2
B. <i>Types with 42D in the pattern</i>				
III/IV/M	Composite type "31/42C/42D/44A/54/77". Strains showing varying sensitivities to these phages were found, the most common patterns being—42C+, 42C/42D+, 42C/42D/44A+, 31/42C/42D/44A/77+	87	89	31
I/III/IV/M	6/7/31/42B/42C/42D/44A/44A/47/47B/47C/54/57/75/76/77/79/81+	2	—	—
Total		89	89	31
C. <i>Types associated with human infections and not lysed by 42D.</i>				
I	29A+	1	0	2
II	3A	4	1	0
III	7/42B/42C/47/47B/47C/76/81+ 6/7/47/53/54/75/76/77/81+ 42C/70/47C/81+(weak lysis by numerous Gp III phages)	20 11	3 0	3 0
	77	2	0	0
	53/77/, 54, 47B+(one of each respectively)	0	2	0
I/II/III/M	3C/29/29A/42C/42E/47B/54/57/73+ 29A/42C/47B/47C/51/81	1 1	1	1
I/III/M	29/29A/42C/77 31/42C/44A/53/54/57/73/79/81 6/7/31/42B/42C/42E/44A/44A/47/47B/47C/ 54/57/79/81+	1 1 2	—	1
	6/29/29A/42B/42C/42E/47/47C/54/57/70/ 75/76/77/81	1	—	—
III/M	44A/47B/47C+ 31/42B/42C/44A/47B/57/81+	1 1	—	—
Total		47	7	8
Total Cultures Typed		151	104	41
Non-typable cultures		7	16	2

*One culture from each herd specimen from which staphylococci were isolated.

obtained from hospitalized cases of post-therapy gastro-enteritis and kindly provided through the courtesy of Dr. G. M. Dack of the University of Chicago in 1955 were found to be of the same type as a number of cultures recovered from cheese. Others from the two sources were closely similar.

Antibiotic sensitivity of cheese staphylococci

The determination of specific antibiotic sensitivity among 997 staphylococci from the dairy sources showed a frequency distribution suggestive of the

presence of two populations in relation to each antibiotic, one of which showed inhibition zones of less than 3mm. for penicillin and chlortetracycline or less than 1 mm. for erythromycin and dihydrostreptomycin to the higher concentration of the respective antibiotics. If these are deemed resistant, then cultures resistant to 10 units of penicillin, to 30 micrograms of chlortetracycline, to 50 micrograms of dihydrostreptomycin and to 15 micrograms of erythromycin were found in the respective proportions of 5%, 0.4%, 7% and 1%. Total data are not presented. None of the resistant strains was of type 42D.

Enterotoxin in cheese

Of the 149 specimens of cheese from factory A that were tested for enterotoxin eight evoked positive emesis in cats. Control specimens caused no reaction. All toxic specimens were from 30 to 60 days old. Numbers of staphylococci present in the emetic specimens ranged to 1,500,000 per gm. All *Staphylococcus* strains from emetic specimens were of phage patterns containing 42D in association with other phages. The characteristic type 42D alone was not involved.

Staphylococci in imported cheese

Among 236 specimens of imported cheese, not a single culture of coagulase-positive staphylococci was isolated at dilutions of 1:100 or greater. Accordingly, no tests for enterotoxin were undertaken with these specimens. The phosphatase test was carried out for each specimen. The names of the various types of cheese tested and their country of origin and the number of specimens that were phosphatase-negative, i.e., had received heat treatment equivalent to pasteurization, are listed in Table 4.

DISCUSSION

This report shows that coagulase-positive staphylococci are common and dispersed throughout Canada in Canadian cheese made from unpasteurized milk. The presence of chronic or active mastitis in cattle is considered to be a major contributing factor as shown by the recovery of the same phage types of staphylococci in cheese as were present often in very large numbers in milk from the same sources as used in its manufacture. Bulk milk from nine herds supplying the specific factory examined contained leucocytes in excess of 500,000 per ml. Direct microscopic examination showed that milk from 38 of the 53 herds supplying this same factory showed bacterial clumps in excess of 5,000,000 per ml. Such milk would be in the "reject" category for manufacturing purposes in accord with the "National Code for Milk Production" as published recently by the National Dairy Council.

The numerical frequency of staphylococci in cheese resembles that described earlier (1) from data collected in 1952-1953. Frequent inadequate quality of milk for cheese-manufacture was also indicated. At that time, however, it was noted that all phage-typable strains of a collection of 50 randomly selected from some 400 isolates gave confluent lysis with phage 42D. Some question may arise lest the numbers of cultures involved in the earlier study may be too small to

TABLE 4—THE DETERMINATION OF STAPHYLOCOCCI AND OF PHOSPHATASE IN IMPORTED CHEESE PURCHASED RETAIL IN CANADA

Country of Manufacture	Types of Cheese tested	No. of Specimens Containing		
		No. of Specimens	Coag. - Pos. Staphylococci	Phosphatase*
Austria	Processed Cheeses	7	0	0
Denmark	Gorgonzola, Blue Tilsiter, Samsoe, Fynbo, Camembert, Port Donais, Tybo, Esrom, Emmentaler, Havarti, Danbo, Elbo, Processed cheeses	55	0	2
England	Lancashire, Stilton, Derby, Cheshire, Caerphilly, Double Gloucester	10	0	1
France	Roquefort, Carre de l'est, Camembert, Brie Tomme de Savoie, Fourne D'Ambert, Semi Soft, Gouda, Munster d'Alsace, Natural Cream, Port Salut, Blue Valmeuse, Valdieve, Pont L'Eveque, Reblochon	28	0	7
Germany	Camembert, Gruyere, Allgauer, Tilsiter, Emmentaler, Brie, Limburger, Romadur, Processed cheeses	20	0	3
Holland	Edam, Gouda, Leidse, Processed cheeses	30	0	3
Italy	Bel Paese, Provolone, Taleggio, Fontina, Ricotta, Pecorino Romano	12	0	0
Norway	Sordo, Second Charce Grana	5	0	0
Sweden	Gjetost, Noekkelost	1	0	0
Switzerland	Primost	1	0	0
U.S.A.	Gruyere, Emmentaler, Tilsiter, Swiss, Processed cheeses	45	0	1
	Romano, Mozzarella, Scamorze, Port Salut, Fontina, Primost, Liederkrantz, Beer Kaese, Camembert, Gorgonzola, Provolone, Tilsiter, Samsoe Casino Gruyere, Roquefort, Old Heidelberg	23	0	3
	TOTALS (Number and Percent)	236	0%	8%

*Present at a degree to indicate lack of pasteurization or equivalent heating process.

allow comparison with results from our 1957 survey, but the possibility of a changing population is considered since, in 1957, among the 269 cultures typed from all sources (cheese-survey, factory A and its milk) a total of 25 were type 42D, 209 were of type 42D in association with other phages, and 62 were types which have been known to be associated with human infections. Further, the incidence of antibiotic-resistant strains, which were of type 42D in 1952 was reduced in 1957 at which time no antibiotic-resistant cultures of type 42D were found.

These findings give further emphasis to the need to consider unpasteurized dairy products as a source of strains of staphylococci potentially able to cause human infection. A precise estimation of the extent of any public health risk that this may engender is not yet possible, since epidemiological evidence to relate consumption of cheese with staphylococcal infections in man is not available. It should be recalled, however, that specific strains of *Staphylococcus* may become established in the human nasopharynx and remain passively as commensal organisms for several months until some predisposing condition causes them to become actively pathogenic. Strains of the same types reported

in association with a number of human illnesses, including post-therapy gastro-enteritis, have been recovered from cheese.

Further, the threshold level of enterotoxin required to cause illness in man is not known. Food-poisoning episodes from cheese have been reported, and this laboratory obtained positive tests for enterotoxin in market cheese both in 1952 and in 1957. The "hospital" type 80/81 strain was not found in cheese during this present survey. With proof of the presence in cheese of other strains known to cause infection in man (often lysed by phage 81 in association with others) the likelihood of contamination of cattle with this virulent organism cannot be overlooked.

Other countries appear to have similar mastitis problems. It is instructive to note, however, that no staphylococci were found in cheese imported from many countries. With the exception of some cheeses containing *Penicillium* cultures and some Swiss-type cheeses, these were made from pasteurized milk or had received equivalent heat-processing. It would thus appear that pasteurizing could obviate the staphylococcus hazard in cheese.

SUMMARY

This paper presents data to show that staphylococci with phage patterns of strains commonly associated, respectively, with cattle and with human infections, are widely distributed, often in large numbers, in Canadian cheese made from unpasteurized milk. Mammary infection of cattle is considered to be contributory. Enterotoxin was demonstrated in 8 of 149 specimens tested from individual vats of cheese from a single factory selected because its product was highly contaminated with staphylococci. The toxic cheeses contained up to 1,500,000 staphylococci per gram. No staphylococci were found among 236 specimens of imported cheese, for the most part made from pasteurized milk, or heat-processed after manufacture.

SOMMAIRE

Les données de ce communiqué montrent que des staphylocoques dont les phages sont de lignées habituellement associées aux infections animales et humaines, se retrouvent souvent en grand nombre dans le fromage Canadien, fait de lait cru. L'infection du pis des vaches en serait une source. De l'entérotoxine a été démontrée dans 8 de 149 échantillons prélevés dans des bacs individuels de fromage d'une seule manufacture choisie parce que son produit était fortement contaminé de staphylocoques. Les fromages contenaient jusqu'à 1,500,000 staphylocoques par gramme. On n'a pas trouvé de staphylocoques dans 236 échantillons de fromage importé dont la majeure partie était faite de lait pasteurisé et l'autre avait été traitée à la chaleur après sa fabrication.

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The Role of the University in the Education of Public Health Workers¹

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PUBLIC health has, through the years, attained full stature as one of the recognized and important fields of the healing arts. No other specialty embraces so many diverse disciplines requiring such varied areas of instruction. Public health involves certain unique fields of knowledge and, thus, requires specialized training facilities. Many individuals receive their training in schools of public health under the direction of certain of our major universities. There are thirteen schools recognized by the Committee on Professional Education of the American Public Health Association (1). Ten are in the continental United States, one in Puerto Rico, and two in Canada. These schools give graduate public health degrees to some seven hundred persons annually. In Canada, on the basis of population, we have double the facilities of the United States.

It is of interest to note that the most recent report of the Committee on Professional Education of the American Public Health Association recommended to the Executive Board that the scope of its accreditation activities should be expanded to include accreditation of graduate programs with respect to public health components in schools other than the schools of public health. This would include programs such as occupational medicine, public health nursing, sanitary engineering and public health residencies. This action would seem to indicate a recognition of the fact that organizations other than the schools of public health have a responsibility toward and a role to play in the education of public health workers.

Certain groups in public health in Canada have developed training facilities distinct from or in co-operation with our schools of hygiene. Twelve universities offer courses leading to degrees and certificates in public health nursing. Training for sanitary inspectors has been carried out by a correspondence course under the direction of the Canadian Public Health Association. This, in recent years, has been supplemented by two intra-mural training centers in Montreal and Toronto, and training courses for new inspectors are held when required in Winnipeg. These are under the sponsorship of either universities or provincial health departments. There is some indication that there may be a need for the establishment of additional training centers for sanitary inspectors in other areas of Canada.

The development of suitable training facilities for public health personnel leading to degrees, certificates or diplomas requires adequate physical facilities, the gathering together of a staff qualified and trained in the various

¹Presented at the Jubilee Meeting of the Canadian Public Health Association, Montreal, Que., June 3, 1959.

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specialties, and an adequate budget. In our opinion, with the possible exception of further training centers for sanitary inspectors established on a regional basis, an adequate number of specialized training centers now exist. We believe that a student entering any of the sub-specialties in public health does require a period of training in one of these specialized centers. Thus, we consider that the basic training of public health personnel is well provided for in Canada and it is not necessary to consider the establishment of further specialized training centers. We do believe, however, that there is a great need for additional facilities for the continuing education of personnel already qualified and engaged in public health practice. It is in this area that these educational opportunities may, at times, be provided most efficiently at the local or regional level.

The Need for Refresher Courses

Perhaps the example of the physician engaged in public health practice would serve to illustrate our point. We would not consider him a fully qualified member of the public health team until he had obtained a diploma in public health or its equivalent. He would receive that training at one of the schools of public health. The academic year of training required would fully justify the expense involved in sending him anywhere in Canada to Toronto, Montreal, or to one of the American centers. After that training he would return to his employment in a much better position to do a more efficient job. Public health, however, has one important and characteristic feature—its ever-changing emphasis and advance. A recent issue of the American Journal of Public Health has noted: "The only thing that is constant is change" (2). If the physician is to be a really efficient public health worker, he must be given the opportunity for further guided training at regular intervals. If he is the type of man we wish to attract into and hold in the field of public health, he will seek higher qualifications such as those of the Royal College of Physicians and Surgeons of Canada or the American Board of Preventive Medicine. If he is to attain these higher qualifications he will need guidance, further instruction and help. This situation is not peculiar to the physician, it has its equivalent in all the other fields of public health. The type of training required is probably best exemplified by the "refresher" course, a relatively short course given at regular intervals.

We are all aware of the geographic characteristics and population distribution of Canada. They have a direct bearing upon the need for regional facilities for continuing education of the public health worker. With our vast distances and our ribbon-type population distribution, it is not economically feasible for all of us to depend upon the two schools of hygiene for the provision of these courses. In recent years, both of these schools have inaugurated refresher courses for public health personnel. These have been most valuable, particularly to the residents of central Canada, but for the cost involved in sending two health officers to a one-week course in Toronto or Montreal, we could provide in western Canada a course locally for twenty to thirty students. All public health physicians need this continuing education and, unless it can be provided locally, the opportunity will be restricted to

the fortunate few. In areas of Canada remote from the established schools of hygiene, refresher courses should become a responsibility of the local university. Our experience has been confined to courses given by a department of preventive medicine on behalf of physicians and sanitary inspectors. Some of our observations may have an application to other university facilities and courses for other public health workers.

A university exists for three primary purposes: teaching, research, and community service. In our university department, our first obligation is to teach undergraduates—medical students, public health nurses and others—but we are also a provincial university, the sole seat of higher learning in a rapidly developing province. We have a responsibility for community service and part of that service is the provision of facilities for continuing education. Some of this teaching is at the graduate and post-graduate level for those seeking higher degrees. This is the responsibility of our School of Graduate Studies. Much of our department's activity is on behalf of those who either have not basic university qualifications or are seeking opportunities for further training without necessarily wishing to obtain graduate degrees. In our university this function is assigned to the Department of University Extension, and it is through this department that we have established our refresher courses in public health.

No university could contemplate refresher courses for public health workers unless there existed the closest possible relationship with the various levels of government concerned with health administration. This close integration of activities has been extensively developed in British Columbia. The Department of Preventive Medicine and other departments in the Faculty of Medicine are active participants in the public health program throughout the province. The provincial and municipal authorities are very keen to provide facilities for educational development of their personnel. They have not only sought our help, they have actively participated in the development and conduct of our refresher courses.

For a number of years we recognized a demonstrable need for refresher courses for public health workers in British Columbia. The culmination of our efforts was the course held for health officers in 1956 (3). Since that time we have held another course for health officers, in January, 1959, and a course for sanitary inspectors in 1958. In all, we have provided four weeks of refresher courses for seventy-five students. Two courses for health officers, each one week in duration, had a total attendance of forty-four physicians. The two-week course for sanitary inspectors was attended by thirty-one.

General Arrangements

All courses were offered under the joint sponsorship of the Health Branch, Provincial Department of Health and Welfare and the University Departments of Extension and Preventive Medicine. The arrangements for each course and its conduct were made the responsibility of the Department of Preventive Medicine. The two courses for health officers were held in the Health Branch building and the nearby Vancouver General Hospital. The course for sanitary inspectors was held in the University.

Course Content

Prior to each course prospective students were asked to submit suggestions as to course content and a program committee made the final decision. The basic aims of the courses were to supply information about newer trends, to give instruction which would lead to more efficient operation of public health agencies and to attempt to excite intellectual curiosity leading on to further investigation and study by the students themselves.

Financial Arrangements

With the co-operation of the Provincial Health Branch, funds for these courses were obtained through National Health Grants. For two of the courses the University was paid only for the actual expenses it incurred. For the sanitary inspectors' course the University was granted a lump sum. Both methods of financing worked well.

The only lecturers paid were those not in the employ of university, government or industry. This, in our experience, presented no difficulties. We have found that the instructors are very eager to participate. As a tangible expression of its appreciation, the University tendered a dinner to lecturers and students on the completion of each course.

The expenses of students attending these courses from outside the Vancouver area were covered by National Health Grants. Their salaries were, of course, continued by the employing agencies. No direct fees were charged by the University to students attending these courses.

Courses for Health Officers

The two courses held for health officers, February 1956 and January 1959, had distinctly different approaches and objectives. The first course was specifically designed as a preparation for the certification examinations in public health and preventive medicine to be held later in 1956 by the Royal College of Physicians and Surgeons of Canada. Attendance was limited to health officers who proposed to write these examinations. Seventeen health officers attended, ten were from rural health units, five were from city health departments, and one was a divisional head in the Health Branch, one was a medical officer in the Royal Canadian Navy. Thirteen wrote the examinations later in the year and twelve were successful. The Health Branch had encouraged these physicians to seek this higher qualification and gave them the opportunity of attending the course. As a result, British Columbia has, in proportion to the number of physicians engaged in public health practice, many more certified specialists than any other province; this, in our opinion, is a highly desirable situation which will, inevitably, result in better service for our people.

At the end of the first course we obtained from the students a critical evaluation of the course and their recommendations for the future. It became evident that although the physicians appreciated the specific preparation for examination, they would have preferred a wider coverage of the field.

The second course was attended by twenty-seven physicians; twelve from rural health units, five from Indian Health Services, and ten from city health

departments. Several fundamental changes were made. Our approach was on a much broader basis in an attempt to provide a more truly "refresher" type of course. The primary emphasis was on the clinical aspects of public health practice and we utilized the services of many clinicians from the Faculty of Medicine. There were thirty-four instructors, six of whom were department heads in the Faculty of Medicine and thirty-one held either full or part-time university appointments. Most of the presentations were of the panel type with several specialties represented in each presentation.

It was obvious from the analysis at the end of the second course that the great majority of health officers preferred this broader approach. In this class there were six preparing for examination and eight who already had certification. All felt that this broad course would help in studies directed toward these examinations but they also felt that the material presented would be most valuable to them in their day-by-day work. The panel type of presentation was very well received and there was general agreement that the emphasis on clinical subjects was timely and realistic. Very few health officers want courses devoted to one particular area or subject, they prefer a wider and, perhaps, more superficial coverage of the material.

The response by the health officers to these two courses has been most favourable. They have been very appreciative and have expressed a desire for further courses. The authorities in the Health Branch feel the courses have filled a real need in the continuing education of their personnel and hope they may be repeated. We, in the university, have gained a sense of satisfaction in supplying facilities to cope with a community need. We hope and expect to be asked to provide similar courses at intervals of a few years. We have proved that the courses can be operated most economically and that we can make an appreciable contribution to the knowledge of health officers.

Course for Sanitary Inspectors

The educational level of most sanitary inspectors is high school graduation. Very few have university degrees. Most have qualified through the correspondence course of the Canadian Public Health Association and a period of in-service training in a health department or unit. In this province, many work in rural health units where they must, of necessity, carry out duties far beyond their level of training. Our population in this province is scattered over a vast area. The sanitary inspector must, in fact, often function as a sanitary engineer calling on the provincial sanitary engineer only when he has exhausted his own knowledge and capabilities. There are only two professionally trained sanitary engineers in the entire province, one employed by the province, the other by the federal department. There is only one veterinarian with public health training presently working at the municipal level.

We have all recognized the need for further training for sanitary inspectors. The sanitary inspectors themselves have been eager for help. We began our planning for this short course a year before it was offered. The planning was done by the University, the Health Branch and the British Columbia Division of the Canadian Institute of Sanitary Inspectors.

The course was held in the University for a two-week period in 1958. Thirty-one sanitary inspectors attended, about one-third of the inspectors employed at the municipal level in the province.

The basic emphasis of the course was on the elementary aspects of sanitary engineering. This phase, occupying about half the time, combined classroom, laboratory, and field experience. The trainees were given instruction in the use of the slide rule, in elementary mathematics, in measurement of rate of flow, in operation of gas chlorinators, in swimming pool operation, etc. The aim was to give them knowledge of basic elements of sanitary engineering which would be of help to them in their day-by-day work. The great variation in age, experience and educational background made this phase of the instruction a real challenge. The Provincial Sanitary Engineer, who was responsible for the greater part of this instruction, deserves much credit.

The remainder of the course was concerned with a variety of subjects. These included municipal administration, entomology, radiation hazards, statistics, health education, etc. All were presented in a manner to assist the sanitary inspector in his job and we used the services of various departments in the university for instruction.

The sanitary inspectors were most appreciative of the course and expressed the hope that they might have similar opportunities in the future. They all felt the information they had received would be of real help to them. The Provincial Sanitary Engineer was satisfied that the sanitary inspectors would now have a better appreciation of the elements of sanitary engineering and would be better able to cope with problems. There was another valuable result from this course—a tangible recognition of the desire of the sanitary inspectors for further training and continuing education. This course was a demonstration to them that we recognized their wishes and their needs.

SUMMARY

We have presented the experience of the Department of Preventive Medicine of the University of British Columbia in the continuing education of public health personnel. This experience has been confined to two courses for health officers and one for sanitary inspectors. We feel this experience has relevance to other university departments and schools and to training for other groups of public health workers.

We do not feel that university departments should enter into competition with schools of hygiene in this continuing educational process. We feel that this type of training can best be done in a school of hygiene but where distance and economic considerations become major obstacles, then universities can supplement and complement their efforts.

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The Development of Shellfish Sanitation Programs in the United States and Canada¹

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SHELLFISH control, as practised today in North America, dates back only to 1925 in the United States and to a later date in Canada. Control was introduced following a serious epidemic of typhoid fever (1) which occurred in the United States in the winter of 1924-25. Independent studies by the U.S. Public Health Service and the local health departments revealed that the epidemic had been caused by the consumption of infected oysters. There were 1,500 cases and 150 deaths attributed to this source and the public reaction to this occurrence was so severe that the shellfish industry was brought to a virtual standstill. The subsequent programs of control in Canada and the United States were developed to restore public confidence in shellfish as a food.

There are two broad phases to the control program, the first related to *sanitation*, the second to *toxicity*. In regard to sanitation—production, harvesting and marketing all require special attention. The control of toxicity is believed to be not directly related to sanitation. The poison is found in planktonic organisms known as dinoflagellates (2) and their survival and multiplication are apparently not dependent on food supplied by sources of pollution such as sewage. With the exception of Alaska and to a lesser degree the west coast states, shellfish toxicity in North America is a Canadian control problem. It is a matter of grave concern to regulatory authorities. Two epidemics of shellfish poisoning in Canada in 1957 involving some 80 cases but no fatalities emphasized the need for a comprehensive and effective control program.

An early decision to use 400 mouse units as a limit to permissible toxicity for shucking stock has stood the test of time. Also, a limit of 1,000 mouse units for shell-stock used in canning, detailed requirements governing canning procedures and the testing of canned shellfish prior to release have all been justified by experience.

Following the typhoid epidemic of 1924-25 the United States Public Health Service was asked by industry and the producing states to assist in restoring public confidence in shellfish. As a result a public meeting was called. It was agreed that "the Public Health Service was to develop standards, conduct research, review state programs, and advise receiving states of the effectiveness of shellfish sanitation programs of the producing states" (3). The responsibility for the control of shellfish sanitation in the United States was

¹Presented at the joint meeting, Canadian Public Health Association and Western Branch, American Public Health Association, Vancouver, B.C., May 20, 1958.

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placed with the states and the over-all program was to be co-ordinated by the Public Health Service, Department of Health, Education and Welfare, Washington. It is a voluntary program which has had the support of the producers, the producing states and some of the receiving states, while other receiving states have shown little interest. The efficiency and adequacy of state control programs are evaluated by the Public Health Service by field studies at selected points and, if they are endorsed, state-licensed producers in that state will be included in the certified list of shellfish shippers. This certification is only as valuable as the receiving state or country wishes to make it. While areas for improvement still exist, the program has been remarkably successful and much of the credit is due to the Public Health Service.

Initially "Minimum Requirements for Endorsement of State Shellfish Control Measures and Certifications for Shippers in Interstate Commerce" (4) were prepared and these were followed by a "Manual of Recommended Practice for Sanitary Control of the Shellfish Industry". Since its production the manual has been used in the United States and in Canada as a guide in all control measures associated with the shellfish sanitation program. Recently, the manual has been revised and will shortly be available in its up-to-date form. It will be in two sections, published separately and titled (a) Part I: Sanitation of Shellfish Growing Areas; (b) Part II: Harvesting and Processing. In the preparation of these documents, interested parties, including Canadians, have been given an opportunity to offer comments and suggestions. It may therefore be expected that the new manual will have wide acceptance by industry and by all regulatory authorities.

The typhoid epidemic of 1924-25 did not have the same impact on the Canadian industry as in the United States but there is no doubt that it must be considered to be the basic reason for the development of a control program in Canada. A number of factors were involved in delaying an active control program in Canada. Foremost among these was an outbreak of disease in oysters in 1915 (5). This was harmless to consumers but destroyed most of the oysters in some of the most productive areas in Prince Edward Island. Subsequently the disease spread to other areas on the Island and has in recent years affected producing areas in New Brunswick. In the "twenties" oysters were the only shellfish of export significance in Canada and early efforts at control were related to them. Only a very few producers were interested in their export and in order that the product might gain entry to the United States, particularly to Massachusetts and New York which then received almost all oysters exported by Canada, a certificate issued by the federal health department was required. This involved visits to the producing areas by officials from Ottawa. In 1930 a federal public health engineer was assigned to the area and shortly afterwards detailed sanitary surveys of producing areas were undertaken. Until the late "thirties" these surveys were associated with oyster-producing areas only.

It should also be pointed out that Canada passed regulations under the Fish Inspection Act in 1925 which required: "Each consignment of oysters imported into Canada, whether in the shell or in bulk, shall be accompanied by a certificate by a competent authority, that will be satisfactory to the

Department of Health, that will show that the oysters contained therein are a safe food product." This was generally interpreted to mean a license or certificate issued by appropriate state agencies and endorsed by the Public Health Service. This regulation is still in force in a slightly revised form but listing of the producer's name on the list of certified shippers is accepted as satisfactory evidence.

During the 1930's trade developed in the export of scallop meat, largely as a result of the discovery of extensive producing areas in the Bay of Fundy. This led to a demand for control and certification although there was no evidence that the product had caused any outbreak of disease. As a result, regulations were adopted in September 1937, for the "inspection and supervision of the shucking, handling and shipping of scallop meat", and this was followed by detailed examinations of production methods and equipment and the issuance of certificates by the federal health department. These certificates are no longer required for export purposes.

Interest then developed in Canada in the production of soft shell clams, most of which are exported to the United States and again certification was required. This, of course, could only be based on detailed knowledge of the producing areas which was obtained by sanitary surveys, supported whenever possible by bacteriological surveys, especially in areas where the delineation of polluted areas presented a problem. Legislation was enacted forbidding the export of clams in the shell from New Brunswick in 1945 and from Nova Scotia in 1946. This led to the construction of numerous shucking plants which in turn required detailed supervision to assure desirable conditions and practices.

In all this work very close liaison was and is maintained between the federal departments of fisheries and health. Authority for the federal control of fisheries is the Fisheries Act, 1932, administered by the Department of Fisheries. While it applies throughout Canada and is enforced by the federal government in the provinces of Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick, authority to administer it has been delegated in varying degrees to certain provinces which include Quebec and British Columbia. Thus, controls in those provinces follow the same pattern as those in the United States with the province having direct control, as do the states, and the federal government checking and endorsing the control program for export purposes if it is satisfactory. No other Canadian provinces produce shellfish for local consumption or export purposes.

Reference has been made to a list of certified shippers of shellfish. This is published twice monthly by the Public Health Service, Division of Sanitary Engineering Services, Department of Health, Education and Welfare, Washington, D.C. and is available to interested persons in both the United States and Canada. In its present form the list bears this statement: "The following shippers of fresh and frozen oysters, clams and mussels have been certified by the regulatory authorities in the United States and Canada. Control measures of these authorities are endorsed jointly by the U.S. Public Health Service and the Canadian Department of National Health and Welfare." These lists

supply the basic data required by Customs officials of the two countries before permitting the entry of shellfish into one country from the other.

The statement on the certified lists of shellfish shippers resulted from an agreement between the two federal health services which was adopted on April 30, 1948. By the terms of the agreement both countries approved a manual of recommended practice for sanitary control. Each country agreed to report to the other the degree of compliance to the regulations. Both countries agreed to facilitate inspections required by the other and the agreement could be terminated by either country on thirty days' notice.

The manual of recommended practice for sanitary control is that prepared by the Public Health Service, Washington, D.C. Information on the degree of compliance is freely exchanged between officials of the two countries. Inspections by officers from the other country have been few in number but have been helpful. After almost ten years there seems little doubt that the agreement and the work which preceded it were soundly conceived and greatly beneficial in many ways. It is difficult to envisage any circumstances which might lead to cancellation of the agreement.

RESEARCH

It was recognized in 1925 that research was desirable to improve the control program. The U.S. Public Health Service has been able to direct more time and effort to this than Canada insofar as problems of sanitary significance are concerned. It established research facilities at Woods Hole, Mass., on the Atlantic coast, subsequently moved its center of activities to Pensacola, Florida, and will shortly move to the Pacific Coast. Meanwhile, Canadian studies have usually been of short duration and have been directed toward the solution of specific problems such as the purification of soft shell clams, the causes of shellfish toxicity (2), etc. Occasionally, studies have been undertaken jointly by Canada and the United States to obtain information on special problems, for example, how market quality is affected by time and temperature while the product is in transit.

As a further control, bacteriological examinations of market stock have been carried out for several years in an effort to insure that the consumer receives a product of the best possible quality. It has been recognized that a good food can easily be contaminated by careless production methods. There have been many efforts to classify shellfish by means of bacteriological tests. However, all the schemes proposed presented serious difficulties to control authorities. A new system was needed. Recently in Eastern Canada and without extensive data it was decided to establish, tentatively, three classes of product based primarily on bacterial quality although physical and chemical conditions also were to be considered. The three classes are "acceptable", "acceptable on condition" and "rejectable". The two latter have tended to fall into one group. As now applied this classification scheme has demonstrated that shellfish from approved sources, if carefully shucked, packed and shipped, can easily meet the "acceptable" limit. Occasionally an "acceptable on condition" lot will result

from unusual circumstances such as high temperatures or inadequate refrigeration. A "rejectable" condition usually is related to poor production methods or inadequate control. The value of these tentative classifications has been repeatedly demonstrated. Follow-up examinations of shucking plants that have produced "rejectable" packs and tightening of controls have almost invariably resulted in substantial improvement in the market quality of their products.

CONFERENCES

The history of shellfish control would be incomplete without reference to the arrangements which are made to bring interested groups together to discuss existing procedures, seek out improved methods of control, and develop greater harmony of action. Meetings are held in both countries at which representatives from both are usually present. Meetings in the United States are usually broader in scope and include industry, research groups and regulatory authorities. In Canada, shellfish control in the east is centered in the Interdepartmental Shellfish Committee which was appointed in late 1940 and held its first meeting in January, 1941. It is composed of representatives from the Department of Fisheries and the Department of National Health and Welfare. With the exception of a short period during World War II this committee has met annually and has guided activities in shellfish control at the federal level. For many years it has had the privilege of welcoming to its meetings leading shellfish control officers of the U.S. Public Health Service. They have contributed much to a better understanding of the many problems associated with shellfish sanitation control.

A counterpart of this committee was established on the Pacific Coast of Canada in 1945 to deal with shellfish production in British Columbia. It has not followed as consistent a pattern as its opposite number in the east but its usefulness was amply demonstrated during the 1957 epidemic of shellfish poisoning.

It may be desirable to make some reference to the details of control leading to the barring of a producer who fails to meet desirable standards. In the United States and in the provinces of British Columbia and Quebec this must be done at the state or provincial level. In the provinces of Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick, export certificates are issued by the Department of National Health and Welfare after review by the federal Department of Fisheries and are subject to cancellation individually. Recourse to this drastic method of control has seldom been necessary but has been found to be effective in achieving compliance with recognized standards.

In the final analysis any program must be based on results. With diseases such as typhoid fever it is seldom possible to say where the infection originated except by weight of evidence during or following an epidemic. Since no epidemics of typhoid fever have been reported since 1924-25 as resulting from the consumption of shellfish from approved sources, it may reasonably be assumed that the control programs have been successful. At the same

time it is realized that no control program related to such vast areas can be perfect. Deliberate evasions or ignorance may still result in the consumption of contaminated shellfish with disastrous effects. This was fully demonstrated in 1939 by a typhoid fever epidemic in Louisiana with 87 initial cases and 8 deaths. This was caused by "bootlegging oysters from a closed area" (6).

It is the purpose and the sincere hope of those associated with the shellfish sanitation program that another epidemic shall not mar the record or claim any victims. This can only be achieved through the wholehearted co-operation of the industry, control authorities and the consuming public. It is the consumer who presents the biggest problem, chiefly the individual who is unaware of the dangers or chooses to ignore them and collects shellfish from areas which have been closed because of pollution or toxicity.

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Two Secondary Cases of Vaccinia

On December 31, 1958, at the Calgary Health Department, AMD, a four-year-old girl was vaccinated in the arm with vaccinia virus and had a primary vaccinia. There were two younger children in this family. The two-year-old boy, RD, had extensive severe atopic dermatitis but at the time of the sister's vaccination RD's eczema was much better than usual with no cracks or crusts. The youngest child DD, aged seven months, broke out with a rash when egg was introduced to his diet but quickly recovered when egg was withdrawn.

About January 15, 1959, RD was first noticed to be scratching and rubbing his skin a great deal and on January 19 or 20 the mother noticed "small hard white lumps" on the skin of arms, legs, ears and face. He was admitted to the hospital on January 23. At this time his temperature was 104° and his eruption, though one pustule touched another throughout much of the affected area, could easily be seen to consist of umbilicated thick walled pustules with deep purple peripheries. RD

was very ill for a week. His temperature at one time reached 105.8° and did not reach normal until the tenth day in the hospital. He was discharged from the hospital on February 15 and when seen at home on February 26 still had the very occasional crust.

On January 31, 1959, DD was admitted to the hospital with several lesions on the knee, seven or eight on the scrotum in a cluster, one on the lip, one in the ear. The lesions were the grayish white umbilicated pustules with thick wall so familiar to us as typical primary vaccinia. His temperature was 102° and was normal on the third day. He was discharged from hospital on the sixth day.

The Calgary Health Department is grateful to Dr. Alan Wright for reporting these cases.

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Canadian Journal of Public Health

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PUBLIC HEALTH IS ONE WORLD

PUBLIC Health is One World" was the theme of the eighty-seventh annual meeting of the American Public Health Association which was held in Atlantic City, New Jersey, October 19 to 23. International in character, the program presented problems and programs in public health throughout the world. A major contribution to the theme was made by the National Citizens Committee for the World Health Organization. More than 4,000 health workers were registered for the meeting, among them seventy public health leaders from thirty-two countries, including Denmark, England, Ghana, French Equatorial Africa, India, Japan, the Soviet Union, Sweden and Yugoslavia.

In her presidential address, Dr. Leona Baumgartner, Commissioner of Health of New York City, spoke of the sessions as "the first world-wide workshop in public health practice." "Our thoughts, our actions draw us more and more to the whole world. For the first time in man's history he holds in his own hands the power to destroy mankind or to go forward. The decision is his—ours—to make. We must arrange for the human race to survive—not just to take survival for granted."

Of great interest was the presentation of the Sedgwick Memorial Medal for distinguished service in public health to Dr. Louis I. Dublin whose work as a health statistician is internationally known. At the second general session Mrs. Franklin D. Roosevelt spoke on the role of international health in peace. At this session the fourteenth presentation of the Albert Lasker Awards was made. Recipients of the awards for medical research were Dr. Albert H. Coombs of the Harvard Medical School, Boston; Dr. Gilbert Dalldorf of the Sloan-Kettering Institute for Cancer Research, Walker Laboratory, New York; and Dr. Jules Freund of the National Institute of Allergy and Infectious Diseases, Bethesda, Maryland. Albert Lasker Awards were granted to Dr. John H. Dingle of Western Reserve Medical School, Cleveland and Maurice Pate, Executive Director of the United Nations International Children's Fund, New York, both for public health and to Senator Lester Hill of Alabama and Congressman John E. Fogarty of Rhode Island for public service.

Dr. Malcolm H. Merrill of Berkeley, California, was elected president of the American Public Health Association. Dr. Jules Gilbert, immediate past president of the Canadian Public Health Association, was named a vice-president. Canada's delegation was large with representatives from coast to coast. The theme "Public Health is One World" will be long remembered by all who attended this outstanding meeting.

The Organizing Committee of the Canadian Public Health Association, 1910

CHARLES J. C. O. HASTINGS, M.D., D.Sc., U.D., LL.D., 1858-1931



The year 1910 marked the establishing of the Canadian Public Health Association. The organizational meeting was in Ottawa and the first general meeting was held in the Parliament Buildings in October of that year. Dr. C. J. C. O. Hastings took an active part.

Following a highly successful experience in general practice, Dr. Hastings was appointed medical officer of health in Toronto in 1910 at a time when strong leadership was needed. The incidence of typhoid fever was alarmingly high, both in the city and in the province. During the fall months hospital wards were crowded with victims of the

disease. It was known that the proper treatment of water and pasteurization of milk would control the disease, but opposition had prevented the introduction of the necessary measures. Dr. Hastings championed the cause of public health and won the support of the public. Filtered chlorinated water was made available and typhoid fever was no longer a menace.

Under Dr. Hastings' direction the Department of Health of the City of Toronto became internationally known. School medical inspection, control of diphtheria by immunization and food inspection services were other services introduced by him.

Dr. Hastings was an impressive man, both in stature and in word. He was endowed richly with common sense, humour, and courage. He became a crusader for health in the city of which he was health officer. His ability to persuade was great and he wielded it effectively in the cause to which he was committed. He gave generously of his time to various medical organizations serving as president of the Academy of Medicine of Toronto and of the Ontario Medical Association. He was one of the first presidents of the Canadian Public Health Association, serving in 1915. He was president of the American Public Health Association in 1918-19, the year of the pandemic of influenza, and presided with great distinction at the general sessions which were convened to consider the critical situation. The University of Toronto honoured him with the degree of LL.D. in 1923. Deeply appreciated, also, was the establishing of the Hastings Scholarship in Public Health at the University of Toronto and the presentation by his friends of his portrait in 1929.

The Association honours his memory as one of its founders and as one whose support in the early years meant much in the establishing of its work.

Vital Statistics

TRENDS IN MORTALITY FROM LEUKAEMIA IN ONTARIO

In view of the interest in the potential effects of ionizing radiation, it is useful to examine the recorded mortality from leukaemia over the past twenty-five years.

RECORDED LEUKAEMIA MORTALITY ONTARIO, 1933-1957
(Rates per 100,000 Population)

Age Group	Males				
	1933-37	1938-42	1943-47	1948-52	1953-57
Under 1*	4.6	3.6	4.3	2.2	0.9
1-4	4.8	5.4	6.3	5.1	6.9
5-14	1.7	1.9	3.2	3.5	2.7
15-24	1.8	2.8	2.5	2.7	2.8
25-34	1.8	1.8	2.3	1.9	2.8
35-44	1.6	2.3	2.8	3.8	2.7
45-54	3.3	4.3	5.4	5.0	6.5
55-64	7.1	7.1	11.4	11.9	14.6
65-74	13.2	12.7	18.9	20.6	24.6
75 & over	10.2	13.4	13.6	23.7	24.7
TOTAL	3.3	3.9	5.2	5.6	6.4
Age Group	Females				
	1933-37	1938-42	1943-47	1948-52	1953-57
Under 1*	4.8	2.5	4.6	3.1	1.9
1-4	3.8	4.2	5.4	5.4	5.1
5-14	1.5	1.7	1.3	2.4	2.9
15-24	1.1	1.4	1.6	1.6	1.6
25-34	1.4	1.4	1.1	1.4	1.8
35-44	2.1	2.4	1.9	2.3	2.6
45-54	4.4	3.2	3.5	5.6	4.8
55-64	5.2	7.2	8.0	8.4	8.9
65-74	9.9	9.4	13.5	13.6	14.8
75 & over	7.9	10.5	13.8	17.4	21.8
TOTAL	2.9	3.2	3.7	4.4	4.7

*Rates for this age group are all based on fewer than ten deaths. Source: Vital Statistics Reports for Ontario, 1933-1945.

The crude mortality rate from leukaemia is substantially higher for males than for females (6.4 vs 4.7 per 100,000 population). Excluding the age group under 1 year, the rates are lowest through ages 5-44 years for males and ages 15-34 for females and increase progressively with age thereafter. The mortality rate is slightly higher at ages 1-4 years than it is at ages 45-54 years, for both sexes. From age 45, the mortality rate is substantially higher for males than for females.

The crude mortality rate has increased substantially during the twenty-five-year period for both males and females. This increase in recorded mortality lies almost entirely in the age groups 55 years and over. The greatest increase has occurred at ages 75 and over, the rates for both sexes having trebled in twenty-five years.

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Association News

Alberta Division

The annual convention of the Alberta Division of the Canadian Public Health Association was held at the Stampeder Hotel, Calgary, September 2-4 under the presidency of Mr. W. A. Milligan of the Provincial Department in Edmonton. In adopting a new constitution, the Division strongly reaffirmed its support of the Canadian Public Health Association and approved an increase in membership fees to cover the needs of the parent body. Provision was also made for the formation of a Dental Officers' Section. Among those elected to the executive for 1960 were Miss Molly Policha as president, Mr. E. J. Kibblewhite as vice-president, Mr. H. L. Hogge as secretary, Miss Mary MacDonald as treasurer. Miss Marion Story was elected chairman of the Membership Committee, Dr. H. M. Brown as chairman of the Medical Officers' Section, Mrs. Helen Steinhauer as chairman of the Public Health Nurses' Section, Mr. H. W. Boulton as chairman of the Sanitary Inspectors' Section and Dr. W. A. Zacherl as chairman of the Dental Officers' Section.

A regional meeting of the Alberta Division was held in Edmonton September 24 in honour of the visit of Dr. John

P. Hubbard, Professor of Public Health and Preventive Medicine at the University of Pennsylvania.

Manitoba Public Health Association

At the annual meeting of the Health Officers' Section of the Manitoba Public Health Association, held October 5 in the Royal Alexandra Hotel, Winnipeg, Dr. E. Snell, medical director of the St. Boniface Health Unit, was named president, succeeding Dr. Noel T. Hurley. Dr. Dorothy Hall, medical director of Portage la Prairie, was elected secretary, being the first woman to be elected to this position.

The group was welcomed by Dr. M. Cleghorn and heard talks by Dr. K. Finkel, who outlined recent advances in polio immunization, Professor Ian Thompson, speaking on the identification of human bones, and Dr. Gordon M. Stephens, who discussed the educationally handicapped child.

The guest speaker at the luncheon was Dr. J. W. Willard, Chief, Research and Statistics Division, Department of National Health and Welfare, Ottawa, who is presently conducting a survey of hospital facilities and alternate care in the province of Manitoba.

News Notes

International

The American Public Health Association, at its recent meeting in Atlantic City in October, included in its resolutions one calling for "a broad educational effort" to discourage cigarette smoking, especially among teenagers. "Lung cancer is a rapidly increasing disease which now kills more than 25,000 in the United States each year and if present trends continue, will claim the lives of more than 1,000,000 present school children before they reach the age of 70 years." Scientific evidence has established that excessive cigarette smoking is a major factor in the disease and that public health officials of the United States and many other

countries have pointed out the relationship between cigarette smoking and lung cancer.

G. H. Hatcher, M.D., D.P.H. has been appointed associate professor of preventive medicine, Faculty of Medicine, University of Miami, Miami, Florida. He will also serve as director of the Dade County Chronic Illness Project and, to complete his present work in Pittsburgh, he will continue as consultant to the Industrial Medicine-Rehabilitation Project of the Harnarville Rehabilitation Center in Pittsburgh.

Federal

A survey is being conducted in northern New Brunswick, with the co-operation of the provincial health authorities in connection

with the frequent occurrence of the usually rare congenital eye defect, aniridia. Participating in this survey are Dr. J. H. Grove, Chief of the Division of Blindness Control and Miss Gabrielle Bourque of the Research and Statistics Division of the Department of National Health and Welfare; Dr. Margery Shaw of the Human Genetics Department, University of Michigan; and Dr. Michel Neveu of Three Rivers, Que.

Dr. Samuel Halevy of the Department of Biochemistry, Laboratory of Nutrition, Hebrew University, Hadassah Medical School, Jerusalem, is spending six months of a year's sabbatical leave with the Biochemical Research Section, Laboratory of Hygiene, Department of National Health and Welfare, Ottawa.

Dr. Atish Chandra Maniar, Bacteriologist, from Bombay, India, is spending two years with the Biologics Control Section of the Laboratory of Hygiene, Department of National Health and Welfare, Ottawa on a National Research Council scholarship. His special interest is in the field of tuberculosis studies.

Dr. Pierre B. J. Moreau, veterinarian, has joined the staff of the Virus Section, Laboratory of Hygiene, Department of National Health and Welfare, at Ottawa. Doctor Moreau, who graduated in Veterinary Medicine from the University of Montreal in 1950, served from 1955 to 1958 in Dacca, East Pakistan, as an instructor in parasitology.

Dr. J. E. Gilbert, consultant in psychiatry of the Mental Health Division of the Department of National Health and Welfare, has accepted a position with the Health Board of the State of South Dakota, resigning his duties at the end of October.

Dr. T. H. Patterson, Chief of the Occupational Health Division, Department of National Health and Welfare, medical member of the Canadian section of the Technical Advisory Board on Air Pollution, and Dr. Morris Katz of the Atmospheric Pollution Service of the same Division of the federal Department, Chairman of the Board, attended a joint meeting of the Canadian-United States' sections held at Ottawa, October 6-7. On October 8, the members of the joint Board met with the International Joint Commission with regard to a hearing on the Windsor-Detroit air pollution reference, and discussed the final report of the Board to the Commission on this study.

As announced recently by the Honourable J. Waldo Monteith, Minister of National Health and Welfare, the federal Parc Savard Hospital, Quebec City, has been transferred

to the Province of Quebec. Parc Savard, which, for many years, has been maintained by the Dominion Government as a quarantine and immigration hospital will still function as a hospital. Immigration requirements will be handled at the new federal Medical Centre at Wolfe's Cove and the required quarantine facilities will be provided in co-operation with the provincial health authorities.

Dr. E. A. Watkinson, Principal Medical Officer, Environmental Health and Special Projects Administration, Department of National Health and Welfare, and Dr. W. J. D. Cooke, Clinical Consultant of the Radiation Protection Division of the same federal Department, attended the recent meeting, held in Toronto, of the Executive Council of the Advisory Committee on the Clinical Uses of Radioactive Isotopes, the former as the representative of the federal Department, the latter as secretary of the Committee.

British Columbia

Dr. A. John Nelson, director of medical services for the British Columbia Electric Company has received a fellowship in the Industrial Medical Association for his contribution to industrial medicine.

Dr. G. R. F. Elliot, Assistant Provincial Health Officer stationed in Vancouver, has been appointed professor in the Department of Preventive Medicine of the University of British Columbia.

Mr. C. J. Keenan has been appointed senior public health engineer with the Division of Public Health Engineering of the Provincial Health Branch. Mr. Keenan obtained his B.Sc. at The Queen's University, Belfast, followed by the diploma in public health from Imperial College, London, England.

The annual provincial conference of union boards of health was held at Kelowna, September 15 with Dr. J. A. Taylor, Deputy Provincial Health Officer, representing the Provincial Health Branch. Prominent among the items discussed was a resolution recommending that salaries of provincial public health nurses be on a par with those of their counterparts serving with the Greater Vancouver Metropolitan Health Committee.

Early in October, the Division of Health Education of the Provincial Health Branch commenced to prepare a manual on health education for school teachers.

The first international conference on waste disposal in the marine environments was held in Berkeley, California during July. Mr. R. Bowering director of the Public Health Engineering Division of the Provincial Health Branch represented British Columbia.

He was accompanied by Mr. F. Neate of his staff.

A mental health institute for public health nurses was held at the Provincial Mental Health Centre in Burnaby, October 26-30. Some fifty persons attended, comprising the supervising nurses and selected nurses from each provincial health unit and representatives from the Greater Vancouver Metropolitan Health Committee. Facilities for the institute and most of the speakers were arranged through the co-operation of the Deputy Minister of Mental Health Services and Dr. F. E. McNair, Director of the Mental Health Centre.

Alberta

Dr. Stanley Greenhill, D.P.H., a graduate of the University of Toronto, has been appointed to the Chair of Preventive Medicine at the University of Alberta. He has been a member of the University staff since 1948, and has served as acting Head of the Department of Preventive Medicine since the resignation of Dr. C. R. Amies in August 1958.

Two new health units have been established, one at Banff and one at Jasper, under a recent amendment to the Health Unit Act which made special provision for National Parks. Each of these areas is already provided with the services of a part-time medical officer of health and a full-time sanitary inspector at the expense of the federal government. A grant from the Provincial Department will now make it possible for these services to be supplemented by those of a part-time public health nurse and a part-time stenographer-technician.

At a meeting of the Maternal and Child Health Advisory Committee in Ottawa on the 21 and 22 September the Provincial Department of Public Health was represented by Mrs. Janet Bailey, Nursing Consultant in Maternal and Child Health, and Dr. E. S. Orford Smith, Director of Local Health Services.

Saskatchewan

The Canadian Nurses Association has established a research committee to study nurse education costs under the chairmanship of Miss Lola Wilson of Regina, director of the Saskatchewan study of the aged and long-term illness. The Committee consists of seven members from nursing, public health and other professional fields.

Manitoba

Hon. George Johnson, Minister of Health and Public Welfare, recently announced the appointment of a survey team to study and

advise the provincial government on the supply and distribution of hospital bed accommodation in Manitoba. The project will be under the direction of Dr. J. W. Willard, director of research and statistics, Department of National Health and Welfare, Ottawa. The survey team is asked to advise on: the hospital bed requirements of rural areas, towns, cities and Metropolitan Winnipeg, and the relative needs for chronic convalescent and active treatment hospital facilities as a part of an integrated and balanced system of hospital facilities for Manitoba. Other aspects of hospital services in Manitoba which may be referred to the survey team by the Minister will also be studied.

The second Manitoba Plumbarama was held September 30, when despite chilly weather, 300 rural people turned out to see a modern plumbing installation, disposal field, and many exhibits. Sponsored by the Manitoba Power Commission, in co-operation with the Provincial Departments of Health and Agriculture, the project is designed to acquaint the public with modern water supply and sewage disposal equipment available for rural installation.

The recent extension of Health Unit services in Manitoba, brings the total population now served to some 401,680, or 70 per cent of the entire province. The Dauphin Health Unit, established in 1944, has now been enlarged and serves a population of 23,913, whereas the Portage la Prairie Health Unit, organized in 1946, has been extended to serve 28,789.

Ontario

The Division of Tuberculosis Prevention had an interesting display at "Mediscope" held in the Queen Elizabeth Building in the Canadian National Exhibition grounds by the Ontario Medical Association. This was in the form of an animated film of a lung showing the progression of disease, while a taped commentary gave the lung's story in the first person. While the story unfolded, explaining the onset of tuberculosis in one man from discovery to sanitarium care to final recovery, pictures on side panels "lit up" illustrating each stage of the story. The Mental Health Division also had a display which showed the "steps" a patient takes in a mental hospital from admission to final discharge. A side panel showed the community scene and through illustrations and lights emphasized the various facilities necessary to a successful community mental health program.

The Hon. Matthew B. Dymond has announced the appointment of Dr. Douglas

Wickware as superintendent of the Ontario Hospital, London. Dr. Wickware has been assistant superintendent since 1953 and replaces Dr. Archibald McCausland who has spent 34 years in the Ontario Mental Health Service.

A type of training school for nurses will be built in Toronto adjacent to the principal hospitals by the Ontario Hospital Services Commission. In 1960 it will commence training 60 registered nurses a year in a two-year course instead of the present three-year course as a pilot plan to help overcome the severe shortage of nurses in the province. It will be known as the Nightingale School of Nursing and will be operated independently through a board appointed by the commission. It is expected that when the new course proves practical, the other sixty training schools and hospitals in Ontario will adopt the two-year program.

Nova Scotia

Three appointments have been made to the staff of Nutrition Division, Miss Jessie Rae, a graduate dietitian with considerable experience in dietetics and nutrition education, has recently recently received an M.Sc. degree from Cornell University and will fill the position of Assistant Director.

Miss Genevieve Gillis, a nutrition graduate of the School of Hygiene, University of Toronto with several years' experience teaching home economics, becomes nutritionist for Cape Breton North Health Unit.

Miss Jane Richardson, a graduate dietitian with experience in dietetics replaces Miss Elizabeth MacKinnon in Fundy Health Unit.

Miss Elizabeth MacKinnon has resigned to accept a National Health Bursary for graduate study in Nutrition at the University of Michigan. Upon her return to the province, she will become Nutritionist with the Halifax City Department of Health.

Appointments:

Miss Rosemary Bates, P.H.N., to Kentville. Mrs. Wilma Raynor, P.H.N., Miss Ivy James, P.H.N., to Western Division. Miss Teresa O'Flaherty to Sydney. Mrs. Marie Porter, P.H.N., to New Waterford. Mrs. Joan Hudgins, P.H.N., to Auburn.

The following nurses have been granted leave of absence to take the course in Public Health Nursing at Dalhousie University: Misses Evelyn Brody, Shirley Martin, Norma Muise, Annie Perry, Joan Skinner, Mrs. Barbara Taylor.

Miss Agnes Taylor, R.N., Public Health Nurse, Port Hood, and Miss Vida Tanner, R.N., Public Health Nurse, Armdale, have both been granted leave of absence to attend the University of Toronto, in order that they may take the course in advanced Public Health Nursing.

Mrs. Helen MacKeigan, P.H.N., New Waterford, recently resigned.

New Brunswick

Hon. J. F. McInerney, M.D., Minister of Health and Social Services, has announced the appointment of Dr. A. S. Cowie as part-time medical director of the Fredericton Polio Clinic and Health Centre to fill the vacancy created by the death of Dr. J. A. M. Bell. Dr. Bell had served as director since the opening of the Clinic in 1955.

Books and Reports

LA SOUCHE DU BCG. Armand Frappier, O.B.E., M.D., L.Sc., F.R.S.C. and M. Panisset, B.A., D.V., F.R.S.C. Published by the Institute of Microbiology and Hygiene, University of Montreal, Montreal, Que. 1957, (in French), 120 pp.

The story of the use of the BCG vaccine in Canada is the story of the work of Dr. Frappier. Dr. Frappier commenced his studies of BCG in 1932 in the bacteriological laboratories of the Faculty of Medicine of the University of Montreal. His studies in this field have continued to be a major interest while serving as director of the Institute of Microbiology and Hygiene which he established in 1939. The first use of the vaccine was in

Montreal in 1926 when Dr. J. A. Baudouin commenced the immunization of infants. It was this primary work in the clinical field and Dr. Frappier's research that initiated the use of the vaccine in Canada.

In 1956 an international technical conference on BCG was convened in Geneva at the direction of the Sub-committee on BCG of the International Union against Tuberculosis. Dr. Frappier was appointed one of the official rapporteurs with the responsibility of analyzing problems relative to strains of BCG. In making this survey, Dr. Frappier corresponded with 48 of the main BCG laboratories in the world.

With Dr. Panisset, a senior colleague, this monograph was subsequently prepared, being based on the report and on the studies conducted in this field by Dr. Frappier and his colleagues over many years. It is pleasing that the preface of the monograph was written by Dr. Léopold Nègre, one of the pioneers in the use of the vaccine and with whose assistance Dr. Frappier commenced his work.

The monograph deals with the properties of BCG, considering these as positive and negative characteristics; Variations in *in vivo* vitality of BCG; maintenance of the BCG strain in the BCG laboratories of the world and other findings including the pros and cons of the homogeneity or heterogeneity of the BCG strain. The authors critically review various opinions, often contradictory, concerning the BCG strain and its control.

All senior students of bacteriology will profit greatly by a study of this monograph and those who are concerned with the preparation of BCG vaccine will find information of the greatest value.

INDUSTRIAL HYGIENE AND TOXICOLOGY. *Second Revised Edition, Volume I, General Principles.* Frank A. Patty, Editor. Interscience Publishers, Inc., New York, London. 1958, 830 pp., \$17.50.

Publication of this three volume work was commenced in 1948 under the editorship of Frank A. Patty, director, industrial hygiene department, General Motors Corporation. An impressive group of authors contributed to each volume. The publication of a second edition is ample evidence of the cordial reception which is being given to this important work. Dr. Patty has continued as editor of volume I of the second edition and major changes in the second revision of volume I are found in the subjects of Noise, Heat, Ionizing Radiation, Human Engineering, Industrial Safety, Sanitation, Air Pollution, and Illumination. The title of volume I, General Principles may not convey the content. The chapters include records and reports, surveys and personnel, engineering and industrial safety, sanitation, mode of entry and action of toxic materials, sampling and

analysis of atmospheric contaminants, air conditioning, air cleaning, occupational dermatoses, explosion and fire hazards of combustible dusts, industrial noise, and the conservation of hearing, radiant energy, and other important subjects. A chapter on ventilation, 65 pages, includes human ventilation requirements, general ventilation, industrial process ventilation, aeromotive methods and equipment, design of ducts for exhaust systems. This volume is indispensable to industrial physicians and all engaged in industrial hygiene.

SMOKING AND CANCER. *A Doctor's Report.* Alton Ochsner, M.D. Julian Messner, Inc. New York, Copp Clark Co. Ltd., Toronto, 86 pp. \$2.25.

This small book of 86 pages is a forcefully written presentation of the evidence supporting the causative relationship of cigarette smoking and lung cancer. The author is a prominent surgeon who was a past president of the American College of Surgeons and the American Cancer Society. It is a book primarily for laymen presenting scientific data in simple terms and in very readable form.

THE PSYCHIATRIC HOSPITAL AS A SMALL SOCIETY. William Caudill. *Published for the Commonwealth Fund by the Harvard University Press, Cambridge, Mass. Published in Canada by S. J. Reginald Saunders & Co. Ltd. 1958, 406 pp. \$7.15.*

All concerned with the treatment of the mentally ill welcome the contributions which those in other scientific fields may be able to make and which may promote better understanding of the problem. Mr. Caudill is lecturer in social anthropology at Harvard University and a research associate of the department of psychiatry at Harvard Medical School.

The author considers a psychiatric hospital as a small society. His observations relate to the day-to-day personal relationships of people—doctors, ward personnel and patients in a small private psychiatric hospital. The author begins with the complete story of the hospital

stay of one patient and tells his experiences in therapy, with administrative rules and with his fellow patients. The author next recounts the events culminating in a general disturbance of the patients. He examines the attitudes of the different groups toward the life of the hospital and relates the factors contributing to the disturbance.

The book is an important contribution and will be read with interest and profit not only by "the patients and staff of psychiatric hospitals" to whom the author has dedicated the volume, but by a wide circle of interested physicians and laymen.

HEALTH EDUCATION, Theory and Practice. Jules Gilbert, M.D., D.P.H. Published by Masson et Cie. Paris. 1959, (in French) 253 pp. \$4.00.

Public health personnel in Canada know of the leadership which Dr. Jules Gilbert of the School of Hygiene, University of Montreal, is giving in public health education. His contribution is not limited to Canada for he is rendering valuable service in the international health field.

It is pleasing that Dr. Gilbert has prepared a textbook presenting the principles, methods and procedures in health education which is designed not only to be of service in Canada, but of value also to health workers in all French-speaking countries.

Dr. Gilbert engaged in general practice before entering academic work. This background is invaluable for it permits him to appreciate the essential contribution in health education which can only be made by members of the medical and related professions. In the text he presents the essential place which the trained health educator occupies in the modern public health program. The special training which Dr. Gilbert has provided for public health nurses in Quebec has made it possible for most of the health units in that province to have programs of effective health education. Dr. Gilbert emphasizes the specialist character of the work of the health educator and indicates

how it differs from the work of the other members of the health department. He stresses the fact that health education of a people must take into account their mentalities, their culture, their resources—institutional and professional—and their economic development.

The chapter headings include pedagogical considerations, psychological considerations, the responsibility for health education, the health educator, the health educator in the school, health education of the individual, public relations of the health department, health education of groups and communities, methods of conducting health education, adaptation, co-ordination, evaluation, some results and summary. Techniques of health education are presented in a section considering, in turn, the conference, print, pictures, films, exhibitions, the newspaper, radio, television and teaching material. The text concludes with an appendix and a bibliography.

Appreciating the value of this volume to public health workers everywhere, this reviewer hopes that an English edition may be published so that the widest distribution may be possible. The author himself is the distributor of the French edition in Canada.

GASTRIC CANCER IN SASKATCHEWAN, 1930-1955. T. H. Crawford Barclay, Ch.M., F.R.F.P.S.G., Senior Associate, Allan Blair Memorial Clinic. Published by the Saskatchewan Cancer Commission, Department of Public Health of Saskatchewan, 1958, 208 pp.

The material in this report represents data derived from the records of all patients suffering from gastric carcinoma examined in the clinics of the Saskatchewan Cancer Commission since its inception in 1931. The review relates to 2,000 consecutive patients during the years 1932-1955 in the province of Saskatchewan. The purpose of the study was to enquire into the natural history of the disease and to determine those factors which may be of prognostic value. It is a report of outstanding importance.



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The fee for the course will be \$35.00 (Canadian Funds). Applications to attend part of the course will be entertained. Applications should be made to the Division of Postgraduate Medical Education, Faculty of Medicine, University of Toronto, by January 15th, 1960. Fees should be made payable to the Chief Accountant, University of Toronto, and sent to the Division of Postgraduate Medical Education on application or before January 31st, 1960.

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